

North Carolina
Wildlife
Resources Commission

Archdale Building, 512 N. Salisbury Street, Raleigh, North Carolina 27611, 919-733-3391

February 8, 1980

MEMO TO: Participants, Sea Turtle Workshop of January 10, 1980

FROM: Frank B. Barick *FBB*

SUBJECT: Workshop Report

We are pleased to transmit herewith a report of the workshop on sea turtles conducted at the UNC Marine Science Laboratory at Morehead City on January 10, 1980.

At this time we are still uncertain as to the extent of aerial surveillance to be conducted by the Commission during the summer of 1980 because we still do not know how much money will be available. We are, nevertheless, hoping that we will be able to extend surveillance to the South Carolina line. We are also hopeful that our efforts might be a little better coordinated next summer.

Please know that your active participation in these efforts on behalf of sea turtles, and the workshop, are much appreciated. We look forward to continuing to work with you on this project.

FBB/dlp

Enclosure

cc: Members, Endangered Species Advisory Committee
Members, Endangered Species Interagency Task Force

Robert Gordon, Laurinburg
Chairman

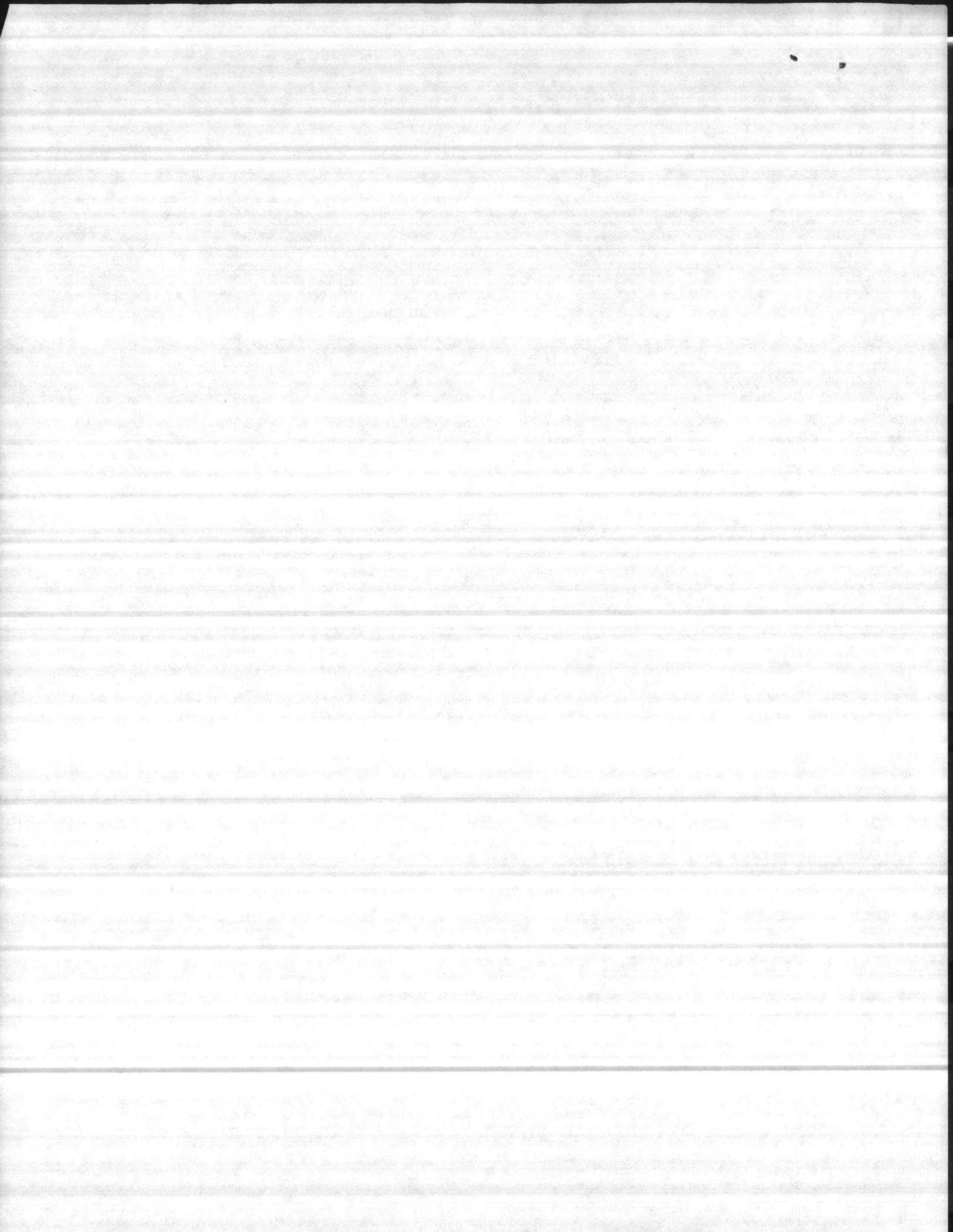
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Dan Robinson, Cullowhee
Dewey W. Wells, Camden



MEETING: Sea Turtle Workshop

PLACE: UNC Institute of Marine Sciences, Morehead City, N. C.

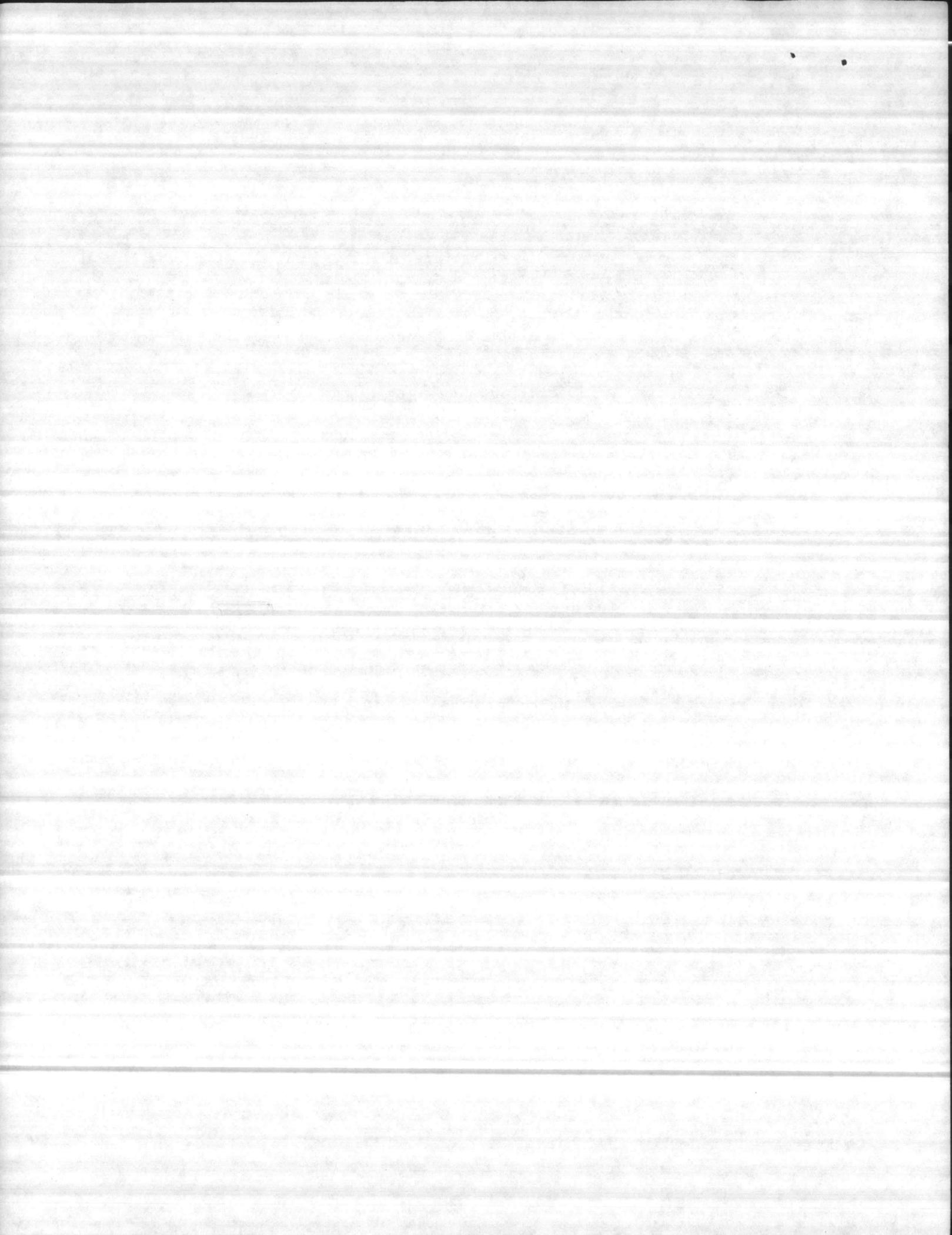
DATE: January 10, 1980

TIME: 9:00 P.M. - 3:30 P.M.

ATTENDANTS: Frank Barick, Wildlife Resources Commission
Phil Brueck, National Park Service
T. Stuart Critcher, Wildlife Resources Commission
Carl H. Davis, Jr., National Park Service
Otto Florschutz, Jr., U. S. Fish & Wildlife Service
James H. Hall, N. C. Marine Fisheries
Rebecca Harriet, National Park Service
Riley Hoggard, National Park Service
Charles Johnson, Office of Marine Affairs
Mike Marshall, N. C. Marine Fisheries
Nora Murdock, U. S. Fish & Wildlife Service
Hugh Passingham, Marine Corps Base, Camp Lejeune
Lance Peacock, Natural Heritage
Charles Peterson, Marine Corps Base, Camp Lejeune
Dianne Poole, Wildlife Resources Commission
Skip Prange, National Park Service
John Reintjes, National Marine Fisheries
Jerry Rich, Wildlife Resources Commission
Preston D. Riddel, National Park Service
Frank Schwartz, Institute of Marine Sciences
C. H. Shelton, N. C. Marine Fisheries
Jim Tyler, N. C. Marine Fisheries
Bruce Weber, National Park Service
Tom Wells, N. C. State Parks & Recreation Div.
Julian Wooten, Marine Corps Base, Camp Lejeune

Frank Barick opened the meeting with a welcome to participants and stated the purpose of this workshop was to review work done on the loggerhead sea turtle during the past year with the idea of improving coordination and uniformity of data collection.

Jerry Rich reported on the aerial surveillance flights he made about three times per week from the end of May through August. He flew the Wildlife Commission's fixed wing plane, clustering the flights somewhat more frequently during periods of full moon. The season involved 225-250 hours of flying time. Mr. Rich would fly from Morehead City up the North Carolina coast to the Virginia line at a height of about 300' above the beach and would return about 1 to 4 miles off the coast over the continental shelf.



In inlet areas where the fresh and salt water meet he spotted turtles on the salt water side. They seemed to like the inlets. When the weather was favorable Mr. Rich could spot 100+ turtles swimming per day. He cited instances of mating.

According to his observations the turtles did not seem to be in groups or follow any certain pattern. At times he sighted them swimming in the same area as sharks and rays with no sign of disharmony. Unless the turtles were mating they would dive when they heard the engine of the plane.

Sightings began to diminish in August with 35 or less being spotted per day. In June Mr. Rich sighted as many as 13 crawls in one day. The crawls were not always uniform. Many false crawls were U and V-shaped and some zig zagged and looped around for a few hundred feet on the beach. There were few crawls sighted after a thunder storm. Several crawls were observed on Shakelford Banks. Most nests could be spotted from the air when the flight was low. No turtles were ever observed on the beach during the day time except dead ones. Mr. Rich said that commercial fishermen were reported to kill sea turtles to protect their nets.

Ground truthing was very difficult at Cape Lookout because of the absence of any distinguishable landmarks. Ground truthing was done by Wildlife Commission and National Park Service personnel.

He observed two leatherbacks around Nags Head. When there is a northeast wind no turtles are spotted offshore.

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Riley Hoggard reported that at Cape Hatteras and Ocracoke, with the exception of Pea Island National Wildlife Refuge, 18 crawls were observed and 11 nests recorded between June 7 and August 7. Aerial observation was done by the Wildlife Commission pilot with ground truthing done by Cape Hatteras personnel. Two nests were transferred to Pea Island (173 eggs combined) from hazardous areas. To date there is no information on hatching success of those nests.

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Riley Hoggard reported that Cape Lookout has completed its third year of participation in the turtle work with expansion each year. Dr. D. L. Stoneburner from the National Park Service Cooperative Research Branch out of Athens, Georgia set this program up and directs it. The purpose is to first supply the necessary information concerning the natural history of the turtle and second to collect year-to-year census within Cape Lookout boundaries.

Surveillance for Cape Lookout ran from June 15 through August 27 for the 6½-mile portion of Core Banks. This area was the subject of nightly patrols by three-wheel beach vehicles at 50 minute intervals. Red lenses were placed over the head lights. The helicopter used for daytime aerial surveillance would land when crawls were spotted and turtle tracks were erased. There was a total of 35 flights made with 90 false crawls. There was a total of 162 observations of nests and false crawls as a result of aerial and ground surveillance. Out of these there were 72 confirmed nests averaging 1.24 nests per mile. Beach width ranged from extremely narrow to wide. The first crawl was spotted in early May with sightings of turtles in the water into December. Researchers tagged 15 turtles but no tagged turtles from previous years were spotted. Mr. Hoggard feels that 90% of the crawls were found.

Hurricane David made quite an impact on the beach. There was no indication of raccoon predation on Cape Lookout to eggs. Predation by ghost crabs occurs when hatchlings go toward the ocean.

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Tom Wells reported that ground surveillance of Hammocks Beach began in June and went through August 5 with a total of 85 crawls producing 57 nests. This work was done by researchers on foot and four-wheel drive vehicle. There was a total

DUNSIOW 16cm

BROWNS 8cm

~~BREAST~~
BEARS 7cm

DUNSIOW
6

$$\frac{5}{15} = \frac{1}{3}$$

$$\frac{4}{16} = \frac{1}{4}$$

$$1 \text{ km} = .6$$

$$7 \text{ miles} = x \text{ km}$$

$$1 \text{ NM} = 2.3 \text{ cm}$$

16 cm

2.3

$$\frac{1 \text{ NM}}{2.3 \text{ cm}}$$

$$16 \text{ NM} = 2.3(x)$$

$$\frac{23}{5} = 4 \frac{3}{5}$$

$$\frac{23}{7} = 3 \frac{2}{7}$$

$$\frac{23}{15} = 1 \frac{8}{15}$$

$$\frac{23}{15} = 1 \frac{8}{15}$$

$$\frac{23}{16} = 1 \frac{7}{16}$$

$$\frac{23}{16} = 1 \frac{7}{16}$$

$$\frac{23}{16} = 1 \frac{7}{16}$$

$$2.3 \overline{) 80} = 3.478$$

$$2.3 \overline{) 70.00} = 30.43$$

$$2.3 \overline{) 6.86} = 2.982$$

$$2.3 \overline{) 160} = 69.56$$

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$$\frac{180}{161} = 1.118$$

$$\frac{190}{184} = 1.032$$

$$\frac{2}{3.43} = 0.583$$

$$\frac{2}{3.043} = 0.657$$

$$\frac{2}{1.6} = 1.25$$

$$\frac{2}{6.86} = 0.291$$

$$\frac{2}{6.8} = 0.294$$

$$\frac{2}{6.8} = 0.294$$

$$\frac{3.43}{1.6} = 2.143$$

$$\frac{3.43}{3.043} = 1.127$$

$$\frac{3.43}{1.6} = 2.143$$

$$\frac{3.43}{6.86} = 0.5$$

$$\frac{3.43}{6.8} = 0.504$$

$$\frac{3.43}{6.8} = 0.504$$

$$\frac{3.48}{1.6} = 2.175$$

$$3.478$$

$$\frac{2088}{348} = 6$$

$$3.43$$

$$\frac{2058}{343} = 6$$

$$\frac{2058}{343} = 6$$

$$\frac{2058}{343} = 6$$

$$5.47$$

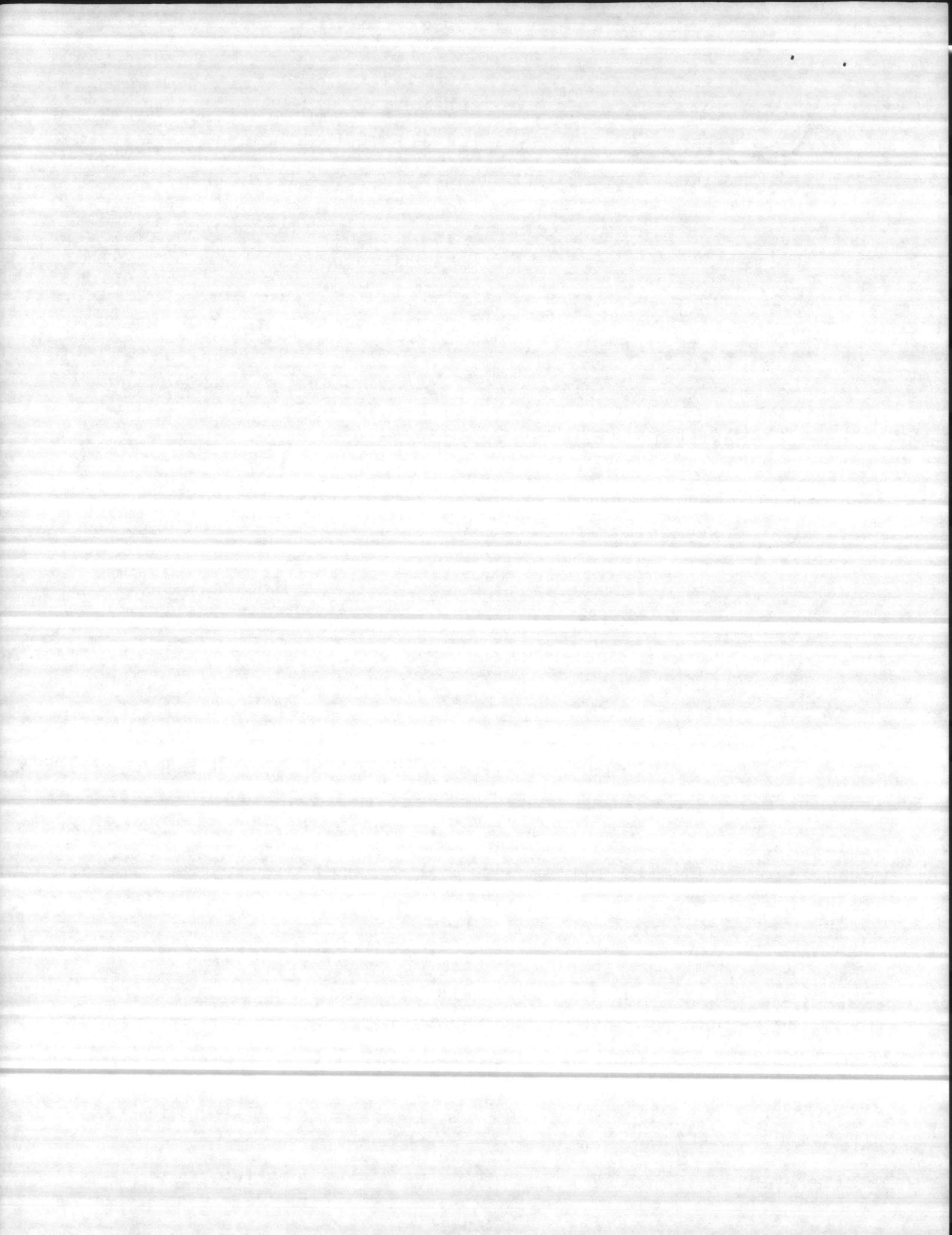
$$\frac{5.475}{8} = 0.684$$

$$\frac{130}{115} = 1.13$$

of 11 more crawls sighted by park personnel. There was no public disturbance of the turtles or predation. The program was expanded this year to include recording all conditions surrounding sightings and 21 turtles were measured. Due to lack of funds there was no way to determine hatching success. Next year it is hoped to increase efforts by tagging and making maps. One turtle washed up on the beach that had been shot. The public was excluded from the beach during full moon periods to ensure nesting success.

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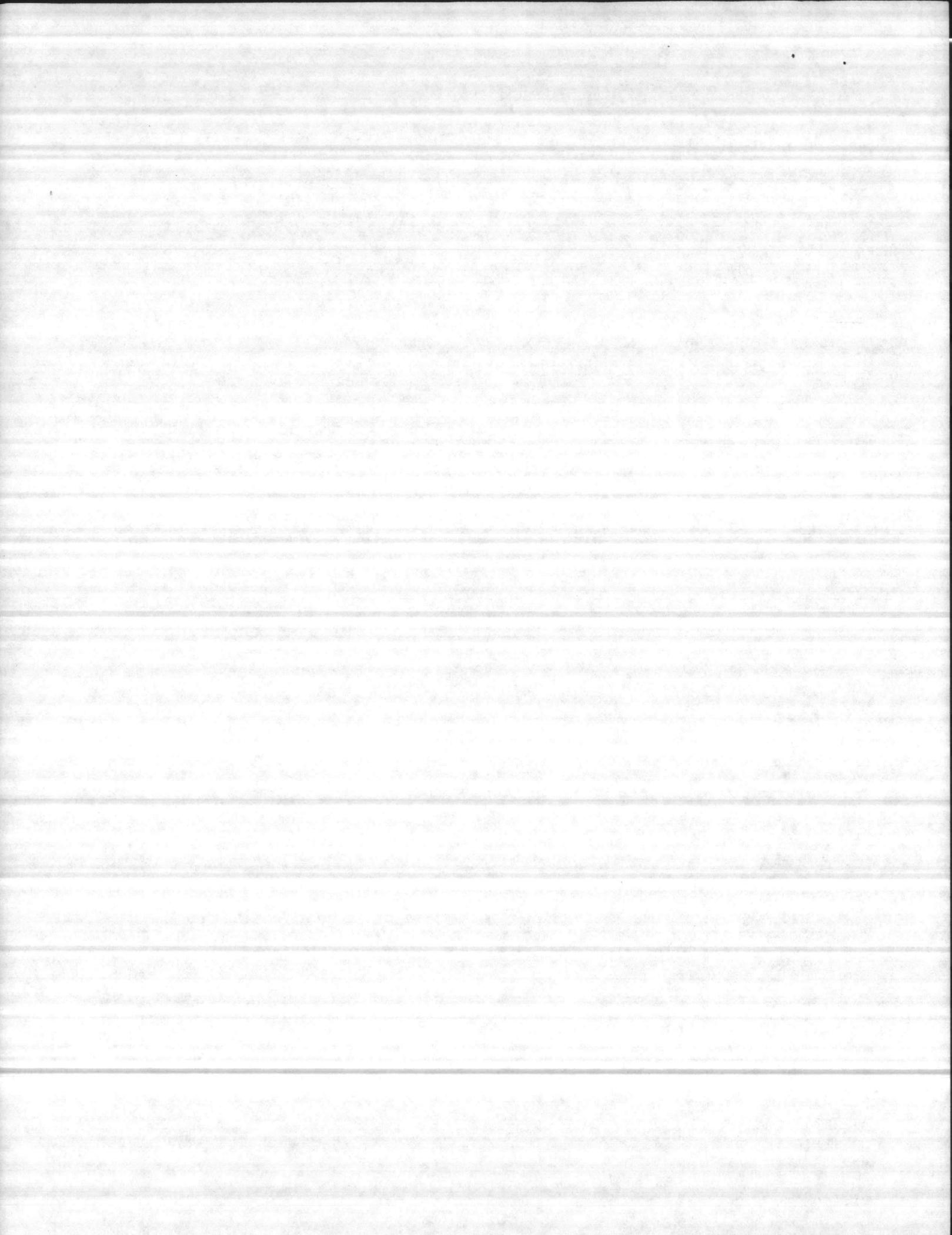
Hugh Passingham reported the Camp Lejeune efforts in turtle surveillance which began in 1974. Nightly patrols on Onslow Beach were conducted at 50 minute turnarounds with four-wheel drive vehicle. Headlights were kept on low beam. The beach is 7 miles long. 14 nests were sent to the Institute of Marine Science for headstarting. 26 turtles were tagged as the turtles got on hard sand on their trek back to the water. Mr. Passingham sighted 3 turtles that had been previously tagged. One of these returned to lay eggs two weeks after laying her first clutch. Some unusual eggs were observed - 1 double yolk, 1 triple yolk, and some abnormally small eggs. The surveillance at Onslow Beach produced sightings of 138 crawls in the 7 mile section, 2 nests with uncounted eggs, 63 nests containing 7,077 eggs with a 57% hatch producing 4,037 hatchlings. Of the eggs that Dr. Schwartz head started, 57.2% hatched. Mr. Passingham discovered by accident that it does not necessarily affect hatch rate for eggs to be dropped. He experienced 85% hatch success after dropping a clutch while loading them for incubation. All nests below the high tide line or in a heavy traffic area were moved. Raccoon predated 4 nests. Camp Lejeune had a formal consultation with the U. S. Fish & Wildlife Service which resulted in a no jeopardy finding. Wire cages were placed over nests as soon as they were found to protect them from raccoons. Representatives of the Natural Resources Branch of Camp Lejeune have found that simply placing a 3'x3' piece of 2x4 electric welded wire over



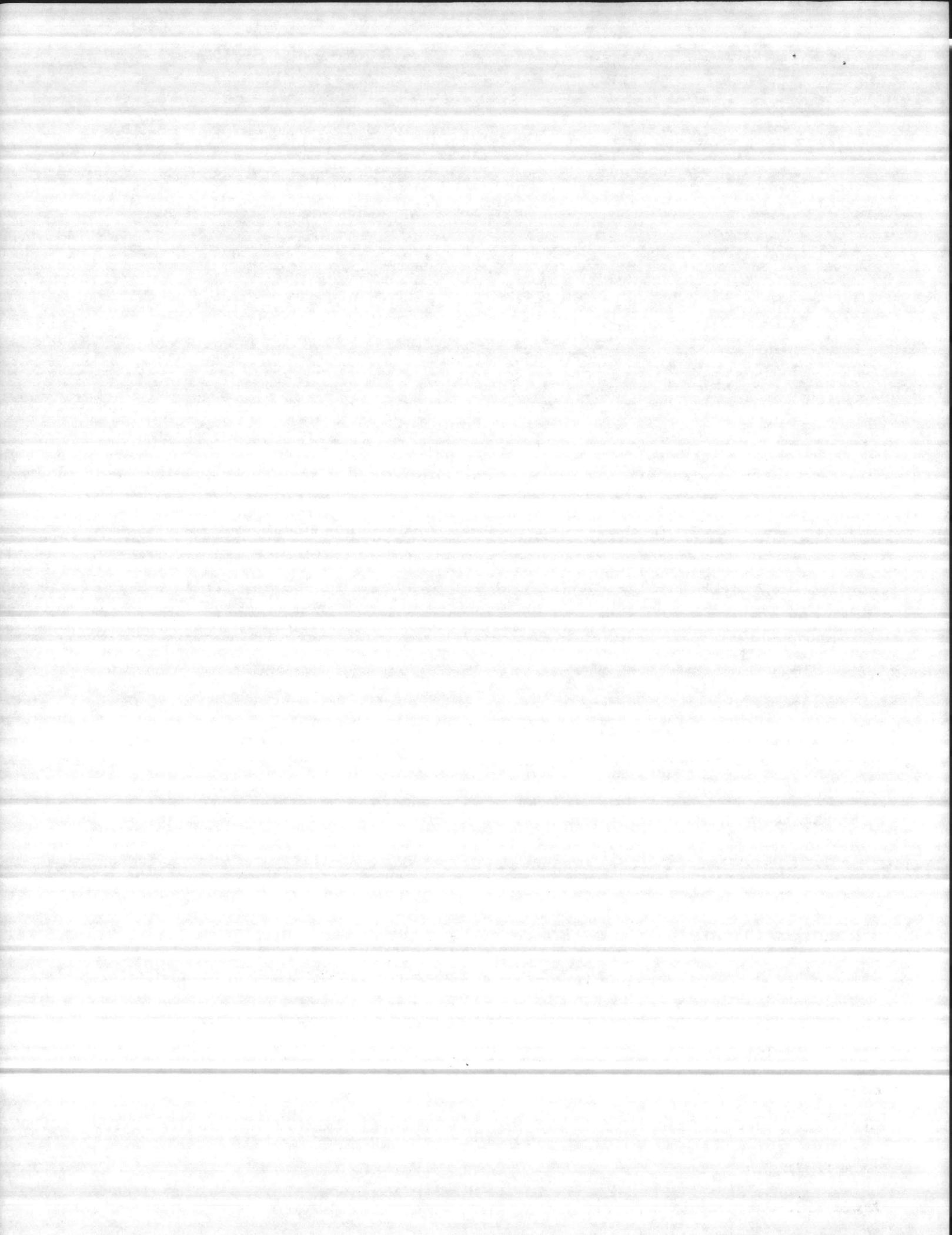
the nest, weighted by sand on the edges, is sufficient to protect the eggs. As a result of a severe storm 6 nests were completely destroyed but some of the nests were dug up from under 2 feet of compacted sand with a fairly good survival rate.

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Otto Florschutz reported on Pea Island Refuge. On its 13 miles of beach there were 9 nests and 12 false crawls compared to 7 nests and 7 crawls last year. Pea Island was at one time involved in a transplant program using eggs from Cape Romaine. This program began in 1972 and continued for a five year period transplanting 6,000 eggs with a 73% hatch success producing about 3,500 to 4,000 hatchlings. Of the 7 national refuges in North Carolina, Pea Island is the only refuge to have ocean beach frontage. Immediately north of North Carolina is Back Bay Refuge which produced 2 loggerhead nests for the first time in over 40 years. At Cape Romaine, a Fish & Wildlife refuge between Charleston and Georgetown, exists a heavy loggerhead concentration which produced 1,833 nests compared to 1,828 last year. Fluctuation has been normal for the past several years. In the southeast United States the Fish & Wildlife Service owns close to 160 miles of ocean beaches which are all monitored for sea turtle activity. In 1979 on these beaches 3,455 loggerhead nests, 14 green turtles, and 2 leatherbacks were sighted. The Southeastern Sea Turtle Recovery Team was formed in December 1978 and has 2 team leaders, 12 recovery team members and over 30 consultants. This team is unique in that it is the only endangered species recovery team that is not administered by the U. S. Fish & Wildlife Service, but rather National Marine Fisheries Service. It deals with 6 species of marine turtles. The team was involved in the Oregon Inlet jetties project in North Carolina. It found that although the project will threaten the integrity of Pea Island Refuge and also affect turtles nesting, the turtle numbers were not large enough to affect the overall status of the loggerhead. In late November of 1979 there was a World Conference on Sea Turtles. As a



result of this week long meeting the objective for future strategy is to develop conservation action based on the biology of the species that will return the sea turtles to former abundance while allowing control of exploitation for the benefit of generations yet to come. Mr. Florschutz said the conference showed how little we really know about the sea turtle despite its world-wide distribution. The conference produced a wide range of papers and presentations dealing with populations of sea turtles throughout the world. Each had the common tone of reductions in number. Some of the points Mr. Florschutz brought from this conference were that sexing of hatchling sea turtles can now be done microscopically and that sex is influenced by egg-sand temperatures. Near 30°C temperature produced an equal number of males and females, but temperatures below that produce more males and above produce more females. There was quite a difference of opinion among the scientists at the conference as to the value of headstarting and transplanting of nests; also as to where imprinting occurs. As a possible solution to predation it has been found that if the freshly laid eggs were moved 10 to 20 meters and reburied it would drastically decrease predation. There is no need to cover the new nest with a wire cage, since it appears the attraction to predators is the scent of the first nest. As a result of the Washington meeting and interest of the National Marine Fisheries Service and the Fish & Wildlife Service and other turtle people there is talk of developing a marine stranding information network. The same data will be collected from all dead turtles found on the beach and will be fed into a central data bank. This program has been developed to the point that State coordinators have been approached. (In North Carolina this is Dr. Frank Schwartz) An 800 telephone number will be established in the southeast to enable the public to report dead turtles. The closest federal, city, county, or state cooperative data collector will be notified. If the turtle was in adequate shape from which to collect parts, Dr. Schwartz would be notified. If it was too decomposed it would be marked with paint or buried. Field data collectors will send turtle stranding data to the state coordinator who will check indicated data and forward it to the Smithsonian which will serve as the network data base.



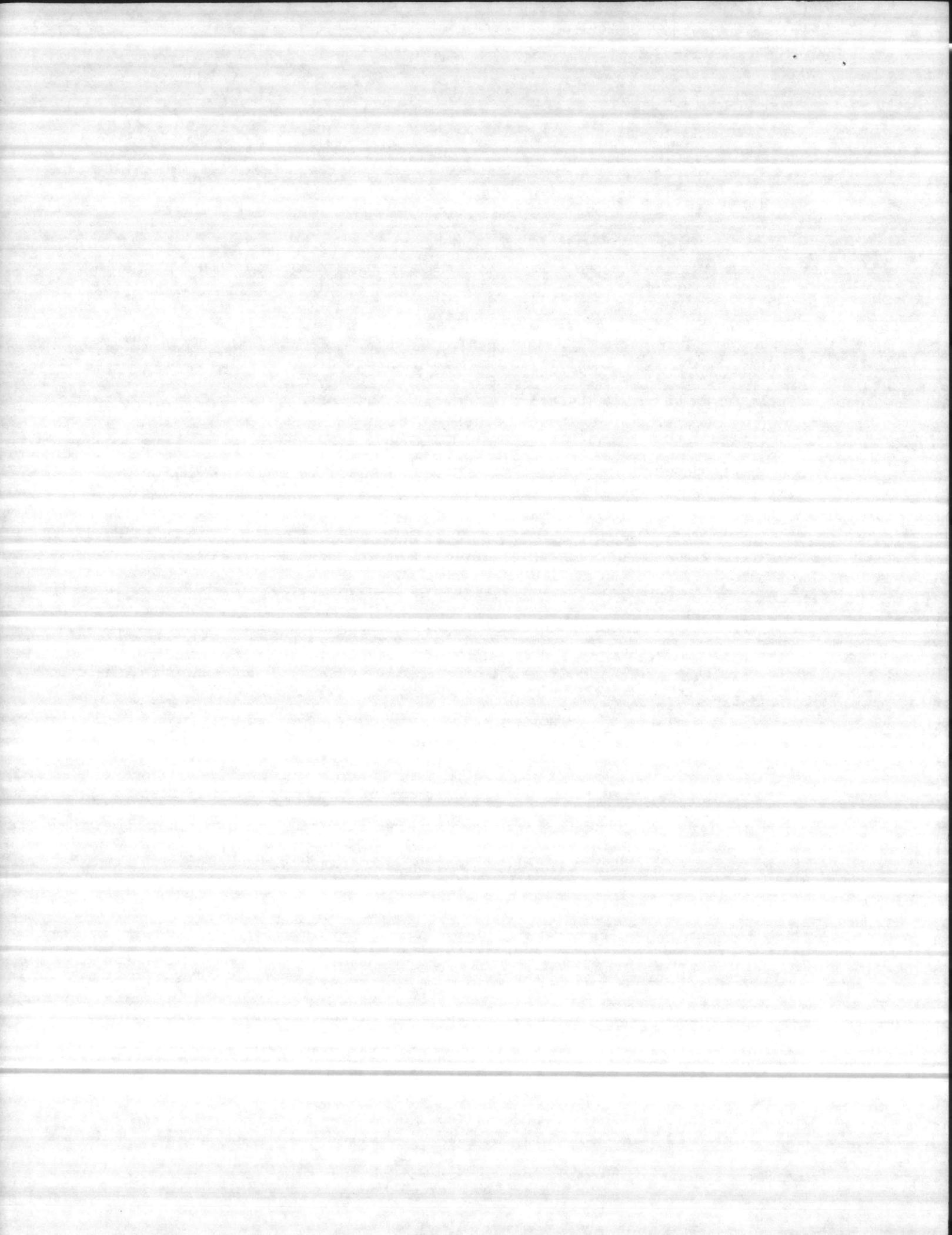
Mr. Florschutz said as the result of work done by National Marine Fisheries Service a new and improved excluder panel has been developed that will force the turtle under the trawler nets.

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Dr. Schwartz reported that incubated eggs would result in 58% or better hatch. In June it takes an average of 81 days for hatching, while July averages 76 days and August 85 days if the eggs are left in the field. Incubated hatching of eggs takes approximately 60 days, with a better percentage of hatch occurring than field incubation in August or later month eggs. He recommended incubating eggs laid in August be moved inside and incubated since the ground temperature at that time is below the critical temperature for the hatchlings or incubation and survival. He has observed that hatchlings will be bigger from eggs laid in Florida than the ones laid in North Carolina and will remain so even when they are all hatched in the same place. He has hatched eggs from Florida and up the coast and has noted the progressive decrease in overall size of hatchlings from eggs of northern beaches. Although there has been some shift in weight differential the size differential has remained constant.

Dr. Schwartz listed the following needs for North Carolina's sea turtle project: quicker reporting, more flights spaced more evenly (not concentrated around full moon periods), better ways to mark nests and better ways of tagging and possibly limit ourselves to certain geographic areas (Cape Lookout, Camp Lejeune, and Hammocks Beach produce 80% of nesting in this State). He also expressed the need for determining the sex of turtles offshore, especially late in the season, standardization of field data collection, identification of those who are tagging and what kind of tags they are using.

Dr. Schwartz felt the state needs to designate a federal sanctuary for marine turtles from Bogue Inlet to New River from the beach to 1 mile offshore during the mating and nesting season. The time and duration of the sanctuary designation by the N. C. Dept. of Marine Fisheries would be flexible depending on favorable environmental conditions. This would prohibit shrimping in that one mile zone between May and September. He feels this will result in fewer dead turtles as a result of drowning in trawlers



nets or being shot.

Mr. John Reintjes explained the original prototype of the excluder panel (one developed and tried in the past 2 years was designed to roll the turtle over the top of the trawl net and supposedly out of the way of the net. In many cases however the turtle would dive into the net when it made contact with the panel. This panel did reduce the shrimp catch but at the same time eliminated some trash fish so that the shrimper ended up with a cleaner catch. The newest excluder panel has been designed to push the turtle under the net. This panel is being used experimentally off the South Carolina coast and the Cape Canaveral Ship Channel to determine its effectiveness. Mr. Reintjes feels acceptance by the shrimper will not be too difficult.

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Other Needs Expressed

Standardize field data forms

More markers at Cape Lookout and other areas

Cover area from New River to the South Carolina Line

It would be helpful if a factorial relationship could be developed between number of crawls and/or nests observed from the air and the number observed by intensive night surveillance on the ground.

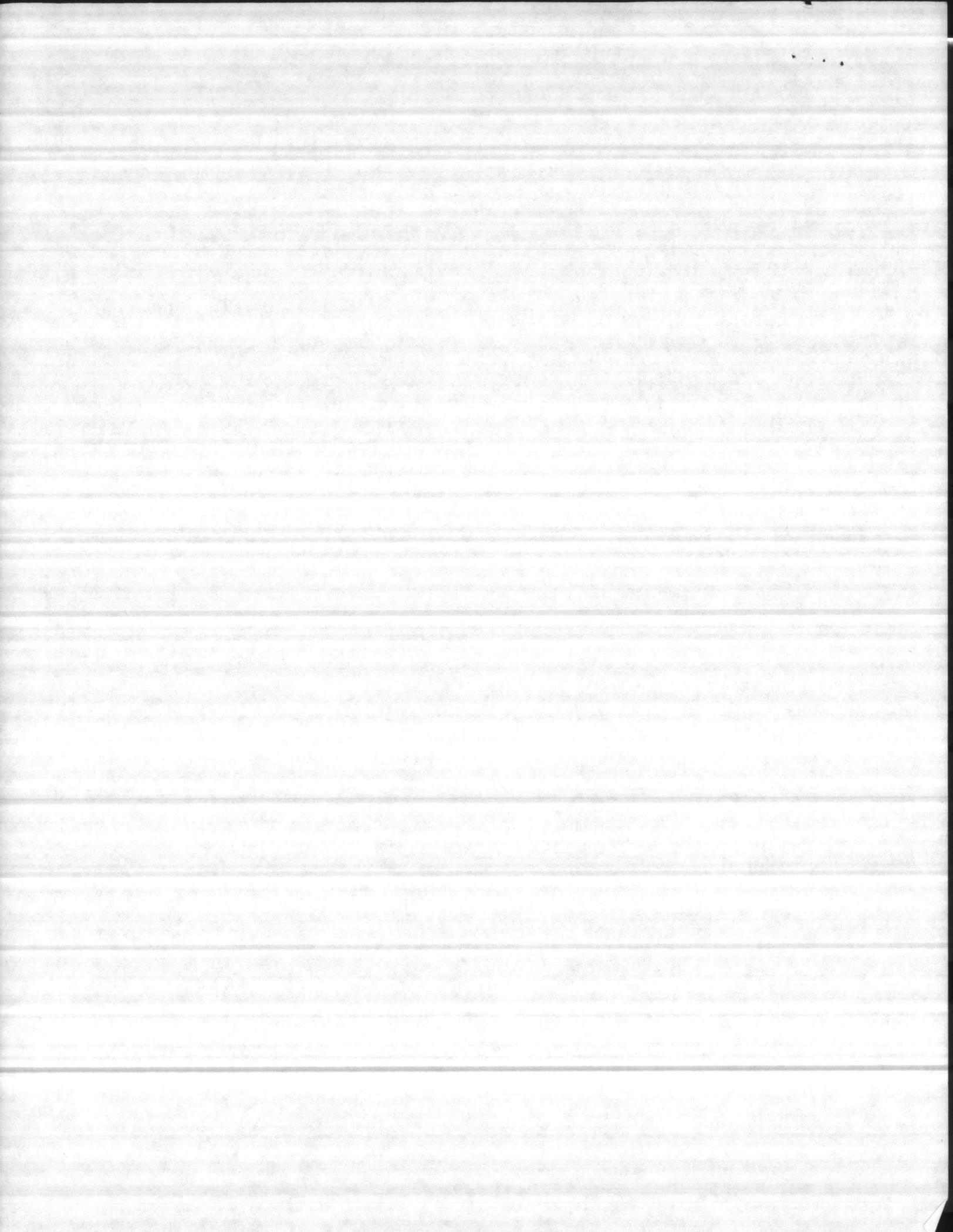
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Other Items of Significance That Emerged During the Course of Discussion

There appears to be evidence that turtles have difficulty in nesting where the beach is made up of coarse shell fragments.

The configuration of the beach profile does not seem to affect the nesting.

It is suspected that imprinting occurs as the hatchling hits the beach and is related to the characteristics of the wave front.



It now appears sexual maturity occurs for the loggerhead at 40 to 50 years.
In the case of the green it seems to occur at about 8 years.

It appears nesting does not increase in frequency during full moon periods.

